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THE HYPOPHOSPHITES—THEIR THERAPEUTIC VALUE.

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It must be confessed by all candid and reflecting physicians that the medical profession is exceedingly slow to learn new facts. Such is the reluctance to forsake old methods of practice, that many stumble heedlessly on through life without once getting out of the rut in which they started. With these, inflammation is still the *phlogiston* of the ancients, and a heated surface and bounding pulse the signal for depletion, antimony, calomel, jalap, &c., without regard to time, place or circumstances. Such men seldom learn anything—never make discoveries—never accomplish anything worthy of the noble profession in which they stand immovable as lamp-posts, bearing up only the light of others. On the other hand, there have always been men in the profession who are but too ready to experiment—who, having no stable theory of their own, eagerly embrace the last one that is presented. These are victims in turn of every new delusion; they are ever astride of some hobby, from which they fall only to mount another.

The first class named will always remain obstinate stumbling blocks in the path of scientific progress; truth must advance directly over them, if it advance at all. The second class are the fruitful parents of homœopathy, hydropathy, and kindred shams which at various periods have scourged the world and contributed greatly to bring the healing art into disgrace.

We have—thank Heaven!—a third class of physicians, never too old or too wise to learn, who are willing to give any theory a fair investigation—to accept whatever of truth may be found in it, and reject with keen discrimination that which stands upon untenable foundations. These are the *real*, the *true* physicians of the world, and worthy to stand by the bedside and minister to the ailments of suffering humanity. They are the men who make discoveries—who do not deem it labor lost to look through a bushel of the chaff of medical literature if they can separate from it one grain of truth—

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who are willing to mine patiently for the diamond *fact*, though it be embedded never so deep in the clay of absurdity, speculation and folly.

When, less than ten years ago, Dr. J. Francis Churchill announced to the Imperial Academy of Paris that he had discovered a specific remedy for pulmonary phthisis, the first class of doctors I have referred to simply pronounced the statement absurd, and continued to stumble along in the old paths with which they were familiar. The second class (such of them as chanced at the time to be unhorsed from some of their previous hobbies) mounted Dr. Churchill's theory and well nigh rode it to death, carrying it to the most ridiculous extremes. The result has been, however, that some of the third class of quiet, thinking students of their profession, having applied the tests of judgment and experience to the subject, have found a new and important agent in the *materia medica*, which, if not equal to all the sanguine anticipations of Dr. Churchill, is still of permanent therapeutic value.

As is well known to those who have read the work of Dr. Churchill, which must ever remain a lasting monument of the enthusiastic research of that physician, the remedies on which he mainly relies are the hypophosphite salts resulting from a union of hypophosphorous acid with a salifiable base. Dr. Churchill's investigations led him to the conclusion that the tubercular diathesis depended upon a deficiency of oxidizable phosphorus in the system, and that the appropriate remedy would be the exhibition of phosphorus in a form capable of oxidation and assimilation. That phosphorus exists in large proportion in the animal economy has long been known, and the additional fact that it is found free in the brain is a demonstration of modern chemical investigation. It cannot be doubted by any intelligent mind that the phosphorus present in the body performs *some* important office, for nature does not distribute the elements without an object. In an article published in *The Boston Medical and Surgical Journal*, in May, 1858, Dr. Nichols, the well-known chemist, remarks:—"The vital importance of these agents (the hypophosphites) in maintaining a normal condition of the system can be understood by a consideration of the probable fact that in all the operations of the mind, in every effort requiring an expenditure of nervous force, they are called into action. In their rapid oxidation in the brain, on occasions of great intellectual effort, there may be a nearer approximation to literal truth in the remark that there are 'thoughts that burn,' than is generally supposed." This observation is supported by the fact that students and others who are performing a large amount of brain labor excrete an unusual amount of phosphates in the urine, a circumstance I have had the curiosity to test repeatedly. It has been asserted—I know not with what truth—that there is an almost total want of phosphorus in the brains of idiots. If chemical science should succeed in demonstrat-

ing this circumstance, it would add another convincing proof of the importance of this element as a generator of nervous power, and might afford a useful hint for the treatment of insanity and other mental aberrations.

It may be assumed, without any stretch of rational conclusion, that if oxidizable phosphorus exists in the brain, blood and tissues of the animal body in its normal condition, its absence or diminution must create variations from the healthy standard—in a word, *disease*. It thence irresistibly follows that the remedy consists in supplying the deficient element in a condition both assimilable and oxidizable. There is no dispute among chemists or physiologists as to the fact that the hypophosphite salts offer the most direct and philosophical means of supplying phosphorus to the system. The small amount of oxygen in combination renders them easily decomposable in the economy. In the language of Dr. Nichols, "what phosphoric acid may have failed to do in supplying the waste of phosphorus, it is almost certain that the acid containing the less amount of oxygen is capable of accomplishing." The principal theory, then, for the administration of the hypophosphites rests upon these three foundations:—

1. That phosphorus is an essential element of the animal economy.
2. That its undue waste by excretion, or otherwise, is a cause of disease.
3. That the natural remedy is phosphorus in an oxidizable and assimilable form.

That the hypophosphites possess alterative and tonic properties cannot be doubted by any person who has witnessed the sometimes surprising effects following their administration. Dr. Newton says of them, in the *Chemical Gazette*, "they seem to possess the power of increasing nerve force and promoting the function of nutrition." Another effect which has often been noticed by those who are familiar with their administration is the apparently anodyne influence exerted in cases of morbid vigilance and restlessness. Although the patient may have been disturbed and wakeful, no sooner does he commence taking the hypophosphites than he sleeps soundly at night. They produce no headache, constipation, or other unpleasant symptom, and the patient does not ordinarily become accustomed to them so as to require an increase of dose. The anodyne effect is probably incidental, and follows from the tonic impression upon the digestive apparatus, as it is well known that judicious physical exercise, or anything that improves the assimilation of the food, produces sleep in the same way.

While it yet remains to be proved that any remedy is capable of curing a well-marked case of phthisis that has advanced to the second stage, there can be no reasonable doubt that the hypophosphites, beyond any other remedy that we possess, will prolong the life of the patient. Dr. Wood believes that consumption is occa-

sionally curable. That the disease depends chiefly upon defective nutrition is almost universally admitted, and if any medicine is capable of remedying the imperfect assimilation of the food the hypophosphites will accomplish it, for therein seems to lie their peculiar power. I have seen one case where the patient was much reduced in flesh and strength, with night-sweats and a racking cough, apparently dependent upon tubercular deposit in the left lung, which resulted favorably. Under the use of the hypophosphites, the patient gained strength daily, the night sweats ceased, appetite returned, and he got rapidly well. I saw the patient again twelve months afterwards, and he appeared to be enjoying very tolerable health, without any signs of the disease which had threatened to put a speedy end to his existence. In the first, or forming stage of phthisis, the hypophosphites may be given with every hope of a favorable result.

But if Dr. Churchill did not discover a remedy for tuberculosis, he certainly did bring before the medical world a class of medicines that are of the greatest value in the numerous diseases resulting from loss of nerve power; also in many of the diseases of infancy connected with the scrofulous diathesis, and those where the osseous system is defective. In all these cases I have seen them administered with the most beneficial results, and will here mention two or three cases as illustrations.

Mrs. N., 34 years of age, married, of delicate nervous organization; had suffered much from dysmenorrhœa; never had children. Patient when she came under my notice was considerably emaciated; countenance pale; pulse weak and considerably accelerated; much troubled with cold hands and feet; appetite capricious, but generally poor; frequent pain and sickness at stomach after meals; has some cough; is dejected and gloomy in spirits; had taken elixir of bark and iron, quinine, cod-liver oil and various other tonics, with very little benefit. Prescribed the following:—*R.* Hypophosphite lime, hypophosphite soda,  $\text{aa}$  3 ij.; water, *Oi.* A tablespoonful to be taken thrice daily. Without other treatment the patient rapidly recovered her health and spirits; appetite became excellent; digestion good; gained several pounds in weight, and after taking the hypophosphites six weeks was to all appearance perfectly well.

Mrs. H., aged 29, had enjoyed very good health until after the birth of her second child, after which she suffered for a year with indigestion, and the long train of nervous symptoms so often witnessed by practitioners that they scarcely need description. She became a prey to the most dismal fancies and gloomy forebodings; passed whole nights without sleep, often in paroxysms of mental anguish distressing to witness. Opiates seemed only to increase the sleeplessness of the patient. She was treated in turn by two medical gentlemen, who exhausted the whole catalogue of tonics and antispasmodics without giving any relief. When I saw the patient,



in addition to the symptoms above detailed, there was much tenderness perceptible upon pressing the fingers on the upper part of the cervical vertebræ. She was ordered to take ten grains of the hypophosphite of lime three times a day. No other treatment was had, with the exception that the patient was directed at first to take a dose of ammoniated tincture of valerian at bedtime, which was soon discontinued. Improvement was noticed almost immediately. On the second night her sleep was undisturbed. After continuing the medicine nearly two months, she appeared perfectly well; appetite and digestion good, sleep sound and refreshing. She assured me that she could never be sufficiently grateful for recovery from a condition she said was "worse than death."

I have only time and space to give one more case, which was that of a boy three years of age, suffering from marasmus. The little patient was much emaciated, his abdomen was distended, he had a diarrhœa, which his mother said had continued with occasional intermissions for nearly two years, sometimes accompanied with bloody discharges. Under the administration of the hypophosphites taken in milk, two grains twice a day, his recovery, apparently permanent, took place in a few weeks. I have known a somewhat similar case recover under the use of the syrup of the pyrophosphate of iron, and will not stop now to consider whether the iron or phosphorus, or both, cured the patient.

Without protracting the discussion further, have I not said enough to warrant the conclusion that the hypophosphites are worthy a more prominent place than the appendix to the United States Dispensatory? In the class of diseases to which they seem so well adapted, I believe they will disappoint the practitioner in fewer instances than more pretentious remedies that come to us labelled *official*.

It may be proper to add, by way of caution to those who may desire to make a trial of the hypophosphites, that some of these salts in the market I have found nearly worthless, they doubtless being improperly prepared. It is of the utmost importance that they should be pure, containing the proper proportion of hypophosphoric acid, and it will be well to see that they come from the laboratory of some reliable chemist.

Albany, N. Y., December, 1865.

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CLINICAL LECTURES ON AMBLYOPIA AND AMAUROSIS, BY PROF.  
A. VON GRAEFE.

[Continued from page 400.]

CASE II.—*Progressive Amaurosis, depending on Atrophy of the Optic Nerves.*

Julius M., a sailor, æt. 24, of tolerably robust appearance and a healthy complexion, presents himself on account of a considerable

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impairment of vision, rendering it already difficult for him to find his way about. According to his own account, the left eye became affected six months, the right four months ago, and in both the rate of progression has been tolerably equal. At present the acuteness of central vision amounts to about  $\frac{1}{100}$  on the left side,  $\frac{1}{30}$  on the right; it should be stated, however, that in the left eye the acuteness of vision in the direction upwards and outwards is not only relatively but absolutely greater than in that of fixation, so that while fingers are with difficulty counted at a distance of nine inches when held directly before the patient, they are made out in two feet if held at an angle of  $20^\circ$  from the point of fixation. This agrees entirely with the following state of the field of vision. In the left eye the entire inner half is wanting, and a hand held up in good daylight is nowhere visible on the farther side of the vertical line of equal division. In the outer and lower quadrant, too, eccentric vision is extremely imperfect, and becomes entirely defective by reduced lamplight. It is only relatively good in the outer and upper quadrant, and is here in one direction more pronounced than in central vision, as is seen in the tendency to eccentric fixation. A better functional state is found in the right eye. The loss in the field of vision, proceeding here, too, from the inner edge, does not extend to the vertical line of equal division, but remains in the plane of vision about  $15^\circ$  from the point of fixation. Below the plane of vision, indeed, it approaches nearer this vertical line, while above it recedes from it. A considerable failure of distinctness in the eccentric vision extends, however, far beyond these limits, it being impossible to count fingers in the immediate vicinity of the nasal side of the point of fixation. In accordance with this, the defective region nearly grazes the point of fixation, by diminished lamplight. In the outer half of the field the eccentric acuteness of vision is relatively, although here not absolutely, better than the central. The considerable loss of perception, and especially the contraction of the field of vision, is manifested in the unsteady, tentative gait of the patient. As the light wanes, he becomes entirely helpless, owing to the above-mentioned torpidity of the retina, existing, as it does, within a large portion of the already contracted field of vision.

With the exception of the sluggish pupillary reaction, especially marked on the left side, nothing abnormal is externally visible. The ophthalmoscope reveals a normal state of the refractive media and internal membranes, and in each eye a high degree of atrophic degeneration of the papilla, under the form of atrophic excavation. The elements of the lamina cribrosa are plainly visible in the larger and excavated portion of the papilla, on the temporal side up to the edge. The remaining substance of the papilla, namely, inwards from the vessels, is of an opaque whiteness; the smaller vessels are wanting; those of medium size are somewhat, the larger, on the other hand, hardly at all contracted.

An examination of the case shows that, at the commencement of the change in his vision, the patient suffered from slight frontal headache, increased by stooping and coupled with a sense of confusion; that for several months, however, these, at the best but slightly pronounced symptoms, have entirely disappeared. At present no trace of disease is to be found in either any organ or in the physical or mental functions. He labors, naturally, at present under some mental depression; no more, however, than might reasonably be attributed to the daily failure in his vision. Nothing of consequence can be ascertained from his previous habits of life, except a not immoderately excessive use of tobacco, which, however, he gave up at the first commencement of the trouble.

The prognosis of this case is altogether a gloomy one. The contraction of the field of vision has taken place in that ominous manner which characterizes *progressive atrophy*: slowly advancing limitation from the inner edge, first on the left side, then symmetrically on the right, besides enormous loss of sight, which has caused on the left side an absolute, and on the right a relative preponderance of eccentric over central vision.

Before, however, giving up all hope, it is our duty to think over all the possible relatively favorable chances, if necessary to exclude them. May we not, perhaps, have to do with one of those cases (already referred to) of contraction of the field of vision resulting from hemiopia, and in which recovery is possible? Unfortunately, our reply must be in the negative; for in the first place the affection has extended on the left side far beyond the vertical line of equal division; in the second, the acuteness of vision at the point of fixation has become, even on the right side, too much affected; in the third, the defective portion of the field is not sharply set apart from the parts that retain their normal function, but is bounded by extensive portions, the acuteness of vision of which is reduced and the torpor typical; fourthly, the development, although more rapid than in the average of cases of progressive atrophy, cannot properly be called acute, i. e., reaching its height in a few weeks; fifthly, we have to do with limitations of the inner portion of the field on each side, whereas such curable or stationary cases have thus far been observed to take the form of hemiopia either temporal or occurring on corresponding sides (very seldom that of defective portions extending upwards or downwards). May not this, we ask again, be perhaps the result of an action already terminated or capable of being arrested, and may it not on this theory be possible to keep what vision exists at present or save an appreciable portion? Neither the course of the disease nor the attendant symptoms support this view. In the case of rapidly-developed amaurotic disorders, accompanied by well-marked cerebral symptoms, the subsidence of which leaves the affection stationary, we have a more favorable foundation to build upon; such is, however, not here the case, the vague indica-

tions of cerebral disturbance which previously existed have passed away without making the least impression on the continued development of the amaurosis. In this point of view, its steady increase is discouraging. The less the connection that can be made out with ulterior cerebral symptoms that possibly admit of relief, the more the atrophy of the optic nerve plays the part, so to speak, of an independent disease, the more desperate is the prognosis. It is, however, made less certain by the discovery of some particular habit or way of life of the patient that is manifestly productive of mischief, if we have reason to trust that the removal of this may affect the progress of the disease. But even under these circumstances let no illusory hopes be indulged in. Has the amaurotic affection passed into the stage of advanced contraction of the field of vision, and has besides marked degeneration of the papilla taken place, the secondary disease may be known to have attained a fatal independence of its cause. But no fact favorable to our case can be made out in this connection. The only suspicious habit, the undue use of tobacco, had been relinquished at the commencement of the disease.

Even in the worst cases of progressive atrophy, it may exceptionally happen that an unexpected pause occurs, after the acuteness of vision has appreciably diminished. I saw, for example, within a few days a patient who had been treated by me for spinal amaurosis eight years before. Vision had at that time become extinct in one eye, and within a year the other had lost so much as to be only able to follow the movements of a hand held on the temporal side. By referring to the notes I took at the time, I have recently ascertained that this state of the vision, poor as it was, had remained unaltered during the space of eight years. Such decided pauses are, however, most exceptional, and I have hardly observed them except in cases where vision had been reduced to its lowest ebb, where, indeed, in the popular sense, blindness might be said to have already commenced. They are to be distinguished from the temporary pauses which last some weeks, rarely from four to six months. These latter happen very frequently, and in the most varied forms of progressive amblyopia, especially those dependent on spinal disease. But in our case the advanced atrophic degeneration of the papilla, with the continuous loss in the field of vision and the failure of all other symptoms, offer no foundation for these hopes. And although we are withheld by the variable and obscure nature of these affections from expressing with too absolute certainty an opinion unfavorable to the possible preservation of a very slight amount of vision, perhaps quantitative perception of light, it is still most probable that within a few months, perhaps a little longer, the patient will become the prey of absolute blindness.

As regards the nature of the disease, it is, in fact, impossible for us to make any other diagnosis than that of *progressive atrophy of the optic nerves*. At present, no symptoms of any other morbid

change are to be found. The paroxysms of headache the patient had at the commencement of the disease, and which in an entirely analogous manner are met with in many amaurotic conditions, do not in my opinion afford special indications of an existing irritation in the substance of the brain or in its membranes. I am inclined to explain many such headaches on the ground of the disordered functions of the eyes themselves. When patients begin to lose their vision, and yet concentrate all their faculties on the appreciation of their visual impressions in order to follow their avocations or guide themselves about, there result derangements of sensibility similar to those occurring in diplopia, seeing in circles of dispersion, &c. In such cases we observe that the headache disappears as soon as the patient intermits his efforts to see. If, however, in the face of this, the atrophy or its cause progresses, we have no longer a right to directly connect the headache with the cause alluded to. This, of course, applies only to certain forms of headache, and the true state of the matter must be decided by a review of the whole case, especially by trying the effect of entire darkness. In the present instance we had nothing on which to base our researches, inasmuch as the headache had already disappeared.

That a headache, caused in the first instance by attempts to see, should be increased by stooping, or anything inducing congestion, is of course not surprising. I am willing, too, to grant that the headache itself may be regarded as congestive, so far as the efforts at vision are propagated along the vaso-motory nerves, as may be best seen in the conjunctival vessels. I merely wish to call attention to this point, that the accompanying headache is not always connected with the cause of the amaurotic affection, but may directly depend on the derangement of vision. In other cases of atrophy paroxysms of pain occur, unconnected with the act of vision and evidently attributable to the cause of the malady. Here, too, it remains an open question as to its original inflammatory nature, inasmuch as it seems that the source of such paroxysms may be found as well in genuine atrophy of isolated segments of the brain as in the so nearly-allied gray degeneration of the spinal cord. Finally, I am not disposed to deny that in cases of amaurosis complicated with chronic meningitis, there may occur pains characterized as inflammatory by the sensibility of the head to the touch, a strongly-marked confusion of the faculties—also by the duration and course of the attacks; but I do not regard such a state of things as either regular or frequent in progressive atrophy of the optic nerves.

In the case of this patient there exist at present no symptoms of paralysis of body or mind, and this fact renders it our duty not to venture beyond the diagnosis of atrophy of the optic nerve. But will it be so in the future? It is exceedingly possible that in the course of years mental alienation may become developed, or some further affection of the general system of a paralytic nature. Though, however, this sequence is not infrequently observed, it is still the fact that more than half the cases of amaurosis do not advance beyond the narrow limits of the special affection, and that when death occurs after a lapse of years, an examination reveals either atrophy of the optic nerves or partial atrophy of the portions of the brain connected with them.

As to anything additional on the score of treatment, it is simply necessary to state that all powerful derivative agents, cathartics, setons, mercurials, diaphoretics and depletives, beneficial as they may be in cases of congestive amblyopia (Case I.), are here decidedly injurious. The more we distinguish the different forms the more will this conviction force itself upon us. Everything that suddenly depresses the strength or excites the circulatory system is to be most carefully avoided. We must, however, cease to act on these principles when an investigation of the case causes us to arrive at opposite conclusions, by demonstrating, for example, the existence of chronic meningitis or the suppression of habitual secretions; but even then (considering the state of paralysis that exists) care must be taken that the remedies employed, such as leeches behind the ears, setons and sublimate, be so administered as not to cause sudden depression of the powers. In the average of cases of progressive atrophy, the best means of retarding its progress consists in a mild tonic course—small doses of iron, salt and tonic baths, milk and whey diet; in other words, a nutritious but not stimulating diet, good air, a moderate course of cold bathing and a carefully-regulated amount of light.

In general, a case like the present may be regarded as a *noli me tangere*. We have a right to look upon it with the same dread with which the physicians of other days approached an amaurosis. An inevitable experience it is, indeed, to the ophthalmic surgeon to find such patients leaving their homes and undertaking long journeys in the hope of finding succor; returning, as they certainly must, having accomplished nothing, and often much blinder than before. Such an event has a very depressing effect on the spirits of the patients, not only because their hopes have failed of fruition, but also because gradual loss of vision is relatively more endurable under the circumstances and exposed to the influences of every-day life.

CASE III.—*Central Scotoma, with partial Atrophy of the Optic Nerve, admitting only of gradual and partial Improvement.*

Alexander K., aged 20, a coachman, and of tolerably robust appearance, comes to us on account of impaired vision of the left eye, coming on, as he states, five months ago, and taking but a few weeks to attain its present development. The right eye, too, sees but imperfectly; this, however, he says has always been the case.

The functional examination reveals, first, an entirely normal condition of the boundaries of each field of vision; the acuteness of vision, however, is reduced in the left eye to  $\frac{1}{30}$ , in the right to about  $\frac{1}{20}$ , owing to the presence of central scotomas, which subtend an arc of from  $8^\circ$  to  $10^\circ$  in the centre of the field. By ordinary light the patient finds it difficult to define these scotomas; by a moderate amount of artificial light, however, he is abundantly able, and it becomes manifest that the amount of vision just referred to is eccentric, inasmuch as within the limits of the central scotoma the patient has but a quantitative perception of light. In making the ophthal-

moscopic examination, it is found that a small image of the flame, reflected by means of a plane mirror on the region of the fovea centralis, awakens but a feeble impression. The scotomas are surrounded by a ring-shaped zone where vision is defective, broader on the inner than on the temporal side.

We hence arrive at the conclusion that the affection of the right eye is by no means congenital, but a matter of recent development, probably simultaneous with that of the left. It is possible that the patient did not notice its coming on, from the fact of this eye being excluded from the act of common vision through a slight divergent strabismus. For amblyopia resulting from exclusion never assumes the shape of central scotoma. In the lighter forms it is characterized by an equal loss of sensitiveness (diminution of central and eccentric vision, especially the former); in the more serious cases, those occurring with persistent strabismus, by a predominance of the inner over the outer portion of the retina.

The ophthalmoscope reveals an entirely normal state of the refractive media and membranes, a physiological excavation (extending here but a short distance outwards from the point of emergence of the vessels); over and above this, however, an undeniably whitish coloration of the papilla, caused by disappearance of the smaller vessels and a small loss of transparency in the tissue, a slight degree, therefore, of atrophic degeneration. Nothing was obtained from a general physical examination. Shortly after this difficulty commenced, the patient had attacks of dizziness and headache, recurring sometimes and lasting even several days; entirely disappearing, however, during the last few months.

An entirely favorable *prognosis*, as far as regards the danger of ultimate blindness, may here be given. As has already been stated, central scotoma, coupled with a field of vision the limits of which are entirely normal, never indicates progressive atrophy. If the disease is in its incipient stage, it is well not to lay too much stress on this fact; not so, however, in a case like the present, where the form is well marked and the affection has culminated. Deterioration, too, is not to be feared. Central scotomas either occur very suddenly, or else they become developed in a few weeks simultaneously or successively in both eyes, increasing outwards from their own centres (not always proceeding straight from the point of fixation); or finally, cases of amblyopia of more prolonged duration, and in which no interruption of the field of vision had been observed, develop at a later period signs of central scotoma after such a manner that while, as a rule, the existing central acuteness of vision is retained, the eccentric improves up to a certain point. We may assume, in all these cases of central scotoma, that where the same state of things has persisted for several months a change for the worse is improbable. The undeniable change in color of the papilla, which is yet to be discussed, by no means necessarily denotes a



danger of progressive atrophy (see above). Is the prognosis, then, favorable as regards a worse condition of things, or blindness, the same is not the case as relates to recovery. If central scotomas have lasted beyond a few weeks, and visible degeneration of the papilla has taken place, an expectation of complete recovery is no longer to be indulged in. In general, a slow improvement takes place, sometimes hardly perceptible and always imperfect, the blank caused by the scotoma becoming smaller, and the surrounding ring-shaped zone, where vision was imperfect, gaining in power, while practice gives eccentric vision a more than normal amount of acuteness. It sometimes happens, too, that in the middle of the central scotoma itself a patch clears away, thus allowing of a satisfactory amount of central vision. (This last event, however, occurs much less frequently than in certain cases of central scotoma resulting from circumscribed choroido-retinitis, well known to all.) Particularly important in making up the prognosis is a knowledge of the fact whether vision is relatively most acute centrally, within the scotoma itself, or in an adjoining region. In the case of a scotoma, the angle of aperture of which is  $20^\circ$ , and where vision of  $\frac{1}{16}$  corresponds with the point of fixation—the patient “seeing through the spot”—the prognosis as regards recovery is much better than where a scotoma with a small angle of aperture coexists with vision <sup>1</sup> which is eccentric, i. e., is situated in a region adjoining the scotoma. It is easy to understand that a disease interrupting the transmission of impressions must be much more grave when it brings about a loss of central vision. It has already been stated that this is the condition of things in the present case, and this circumstance, in connection with the fact that the disease has for some time remained at nearly the same level, and degeneration of the papilla has taken place, leads us to infer that at the utmost there may result an almost imperceptible improvement in the first sense alluded to. Whether our patient will, in the course of time, be again in a condition to read ordinary type is a matter of uncertainty.

It is particularly difficult here to enter more minutely into the question of diagnosis. Pathological anatomy has as yet furnished us with no data in such cases of central scotoma, and clinical observation gives us but little theoretical instruction. The fact that both eyes are affected, while other symptoms of central disturbance are wanting, has caused preference to be given to the theory of the existence of some morbid process in the chiasma nervorum opticorum; such an hypothesis, however, I think rests here on slight grounds. Were some material cause, such as apoplexy or impairment of substance, located in the chiasma, the symmetrical character of the affection would seem to me entirely incomprehensible. It appears to me much more probable that a defined cause of the disease holds sway at the cerebral extremity of the optic nerves, and that these regions feel the influence of that symmetrical tendency that governs

twin organs of sense, and is often so strikingly shown in the external portions of the eye. But to what particular derangement can we bring the affair home? The instantaneous occurrence of scotomas has caused them to be attributed to hæmorrhagic causes. Against this may be set the limited extent of the affection, as well as its more gradual development in otherwise analogous cases. Moreover, this state of things is never found in connection with other hæmorrhagic diseases of the brain, and is ascertained to relatively occur with most frequency in young patients, with whom the principal predisposing causes of cerebral hæmorrhage are absent. It is not impossible that we have to do with anomalies of another kind in the circulation, with a stimulation affecting certain points of the vaso-motory nervous chain, or, in general, with a functional (molecular?) interruption of the transmission of impressions, the first approach of which we are unable to trace to any palpable material cause. The subsequent degeneration of the papilla is consistent with this theory, inasmuch as it is to be regarded as probably consecutive. If we suppose the disease to have proceeded from causes of a vaso-motory nature, its symmetrical occurrence at the inner end of each optic nerve would admit of ready explanation. It would thus, too, be rendered comprehensible why central scotomas should sometimes form after an exhausting disease of the entire system, with other signs of vaso-motory disturbance; or after mental affections, with absence of cutaneous sensibility.

The foundation of our diagnosis being thus uncertain, our choice of remedies must be based principally on the state of the constitution, as also on the causes and accompaniments of the disease. If the affection is recent, or if there are symptoms of cerebral congestion, it would be well to try the effect of a few local bloodlettings, by applying leeches behind the ears or the Heurteloup to the temple. Where hæmorrhoidal or catamenial complications are suspected, they of course deserve consideration. If symptoms of mental derangement manifest themselves in connection with the disease, or if cutaneous sensibility becomes impaired, a course of zinc or nitrate of silver should be prescribed. If the skin fulfils its functions irregularly, the effect of a powerful diaphoretic—a Roman bath, for example—should be tried, if no contra-indications exist. If, on the other hand, central scotoma has been developed in the course of a prostrating disease, a tonic course is indicated—small doses of iron, warm baths, nourishing food, residence in the country, &c. We cannot boast of having found any special course of treatment indicated in the case of our patient. His previous attacks of giddiness and headache admit the supposition of congestive antecedents, although susceptible of other explanations.

The patient was shown again two months later. Several local abstractions of blood had meanwhile been made, and a diaphoretic course carried out. The improvement noticed consisted in an in-

creased energy of the indistinct region surrounding the scotoma, without any particular change in the scotoma itself. In consequence of this the acuteness of vision (still eccentric) had increased to  $\frac{2}{3}$  on one side and  $\frac{1}{6}$  on the other. The patient was now to commence systematic practice of the eyes. For such cases prove that the standard of eccentric vision is set by the amount of its employment, and that the capacity of that portion of the retina adjacent to its centre is capable of being developed beyond the normal bounds. Without ever attaining the normal acuteness of the retinal centre, eccentric vision may double and treble itself in cases of central interruption. This development may be partially instinctive, brought about by the use of the eyes, and partially promoted by systematic practice. We give patients, the acuteness of whose vision is insufficient, ordinary type to read, and then generally magnifying glasses of unusual construction, and based, I think, on a sound principle. Two convex glasses—in this case  $+\frac{1}{2}$  and  $+\frac{1}{3}$  were selected—are placed an inch apart in a short metallic tube, and the whole furnished with an appropriate handle. We thus secure a considerable amount of magnifying power in connection with less spherical aberration, and a removal to a better distance from the eye than in the case of ordinary convex glasses. I need not add that this system of practice should be restricted at first to a very short time, perhaps two minutes, and to a size of type not barely recognizable, but seen with some degree of readiness.

[To be continued.]

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### Reports of Medical Societies.

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EXTRACTS FROM THE RECORDS OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. BY FRANCIS MINOT, M.D., SECRETARY.

Nov. 27th.—*Death from Hæmorrhage three weeks after Confinement.*

—Dr. H. J. BIGELOW reported the following case:—

A lady, 30 years old, who had always been healthy, was confined for the third time three weeks ago. Her labors had always been very easy and rapid. She did well for one week, and then was attacked with pain in the right side; two days afterwards there was a moderate effusion into the pleura. She improved daily, and on the 25th the fluid was almost wholly absorbed. She nursed her child but once or twice daily, the infant having also a wet-nurse. Although anxious to be up, this was not allowed, but she sat up in bed all day yesterday. In the evening, between 5 and 6 o'clock, she remarked that she had not felt so well for some time. Soon afterwards, having occasion to get out of bed, on getting into bed again she became faint. Dr. Bigelow was sent for, but not being at home, Dr. Coolidge came in his stead. Stimulants were given, and the patient revived. Dr. C. remained with her for half an hour, and left her quite comfortable. Dr. Bigelow arrived soon afterwards, and found her still faint. The

pulse was small, the hands cold, the forehead cool, the rect warm, and the patient had vomited twice. She was quite conscious, and complained of no single sensation, except a little griping in the abdomen, for which forty drops of McMunn's elixir of opium were given by injection, and afterwards twenty more by the mouth. There was no pain, no sensation of coldness and no lividity. Stimulants of various kinds were freely given, and bottles of hot water were placed around the patient. She continued to vomit occasionally, and the pulse grew weaker and weaker. The intellect remained perfect, and she asked if she were dying. Soon after eight o'clock she began to sigh, and at half past eight she ceased to breathe. The pulse continued to beat feebly for fifteen minutes after apparent death.

There was no autopsy.

Dr. Bigelow believed the death to have been caused by hæmorrhage into the cavity of the uterus, which did not escape externally.

Dr. Gould had lately had a somewhat similar case. A young lady, 30 years old, who had never before been sick, was seized with headache on the morning of Nov. 12th, and remained in bed all day. At noon the headache left her, but she was attacked with severe pain beneath the sternum. There was also much tenderness on pressure at that part. The respiration was rapid, the inspiration being jerking. Stimulants were applied externally, and an opiate was given. The next day the patient declared that she felt quite well, though weak and nervous. No physical signs were detected in the chest. There was no particular change till Thursday, the 16th. At the visit of that day, at noon, Dr. G. was told that the patient had passed a good night, and had been sleeping quietly most of the forenoon. The patient made the same statement, and said she hoped to enjoy still more rest. No apprehension existed on the part of either parents or patient. On examination, she was found to be in a state of collapse, icy cold, and pulseless, except at the carotids. It was thought possible, at first, that this condition might be owing to Dover's powder, ten grains of which she had taken of her own accord towards morning. She had no pain nor headache, and complained only of a sense of fatigue. Some brandy was given, after which the patient began to vomit with great violence, as in cholera, and had hiccough. The veins of the neck were largely distended. Only a single feeble sound of the heart could be detected by auscultation. There was neither dyspnoea nor orthopnoea, nor choice of position: but general coldness. She was quite lucid, calm and cheerful, and expressed surprise at the alarm of her friends, assuring them that she could be in no danger. Stimulants of all kinds were employed, externally and internally, but there was no change in the pulse or in any of the symptoms till four o'clock the next morning, when she quietly died.

No autopsy was allowed.

Dr. Gould was at a loss to account for the symptoms and death; but asked whether the original attack could possibly have been endocarditis, which might have resulted in softening or rupture of some part of the heart, or the formation of coagula within its cavities?

Dec. 11th.—*Pyelitis*.—Dr. BORLAND showed the bladder and kidneys of a man who died in the City Hospital, and gave the following account of the case:—The patient was a single man, 48 years old, whose occupation was that of a mover of buildings. He entered the

Hospital on the 28th day of November. He had a marked angular curvature of the spine, at the lower dorsal and upper lumbar vertebræ. He served two years in the army, when the curvature increased somewhat. He had some slight pains which he considered to be rheumatic; they were confined to the lower half of the body, below the curvature.

Six months before entrance, he noticed a loss of power in micturition, and dribbling. For three months he noticed his urine to be somewhat bloody; — for the last three months he has seen no blood, but always some pus at the end of micturition. Since the commencement of the renal trouble he has progressive emaciation of the legs; weakness and inclination to trip from dragging of the toes; no formation. He was able, however, to do light work up to one month before entrance.

The day before he was admitted he had a chill, with partial suppression of urine. At entrance he complained of dizziness and dull frontal headache. He had light tenderness over the pubes, and but slight pain on deep pressure in the region of the curvature. No pain that could be attributed to the kidneys. His pulse was 88, and he was inclined to constipation. His chief source of trouble was a slight feeling of tenesmus about the rectum and bladder, which was readily relieved by two grains of opium, given in suppository. He was ordered the infusion of buchu.

Dec. 7th, the patient continued in the same condition, with the exception of some epigastric pain and vomiting. The amount of urine passed, both by voluntary effort and by catheterism, was not more than 14 ounces in 24 hours. The passage of the catheter produced little or no pain.

Vomiting continued to be urgent for four days, in spite of the use of oxalate of cerium, dilute hydrocyanic acid, and sinapisms to the epigastrium. Dec. 6th, on passing the catheter little or no urine could be obtained, but 5 or 6 ounces of pure pus. The bladder was washed out by the use of the double catheter. On Dec. 7th, the patient was moribund; pulse 44, respirations 10; and at noon he died.

The autopsy was made by Dr. Chas. W. Swan, Pathologist to the Hospital. His attention had not been drawn to the fact of the curvature of the spine, and nothing in the autopsy pointing particularly to it, it escaped his notice.

The pelvis of the left kidney was converted into an abscess, containing about an ounce of yellowish, slightly offensive pus. Several culs-de-sacs extended into the substance of the cones, displacing some of them almost entirely. The lining membrane of the cavity was thick, white and opaque, and in places somewhat livid. Pus flowed freely through the ureter into the bladder. The pelvis of the right kidney was healthy. Both kidneys were indurated, their surfaces puckered and mottled with yellowish clay-color. By the microscope, healthy tubuli and epithelium were found, but mixed with these was much isolated, imperfect epithelium, with distinct outlines, whose nuclei in many cases were converted into spherical, compact masses of granules, which latter were also found free. Some of the free cell-elements were oval, or almost fusiform, reminding one slightly of the fibro-plastic elements, but still apparently only altered epithelium.

The bladder was contracted, thickened, and apparently wanting in mucous membrane. Its internal surface was greenish-black, and its contents quite offensive.

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 THE BOSTON MEDICAL AND SURGICAL JOURNAL.
 

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 BOSTON: THURSDAY, DECEMBER 21, 1865.
 

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CHOLERA—IS IT TRANSMISSIBLE?—Every physician must feel the importance of this question, particularly at a time when the authorities of every port along our wide seaboard are called upon to take decided action in the matter of quarantine, and naturally look to our profession for advice. Unfortunately, it is a question concerning which opinions widely differ. The majority of physicians in New England, perhaps, believe that it is not contagious, but mostly, so far as we know, on evidence of a negative character. Dr. Snow, the Superintendent of Health in Providence, in a recent tract for the people, says that it would be a "work of supererogation" to attempt to prove that it is not contagious, and that no person of intelligence can believe otherwise. The evidence he offers is also wholly of a negative character. As may be supposed, he considers quarantine wholly unnecessary, and assumes that the medical faculty of Paris have the same faith. With no evidence of our own to offer, we shall again present to our readers the views of those who have had fresh opportunity of observation, and it will be seen how strong is the belief which prevails among those who are now witnesses of its ravages in its contagious nature. Indeed, not a dissenting voice is raised to such opinions as these which follow in the discussions at the medical societies, which fill the pages of foreign journals.

At the session of the Académie des Sciences, Nov. 6th, M. Velpeau read a paper of some length on the subject of the cure of cholera. He believes the disease is contagious, and states "that all observations made upon the appearance of cholera in those places where it is not epidemic—for example, in Western Europe—seem to me to prove, almost to a certainty, that cholera is contagious."

The following extract is translated from the *Archives Générales* of November. It is a portion of a memoir presented to the Académie de Médecine by M. Jules Worms, Médecin en chef de l'hôpital militaire du Gros-caillou.

"There is a special agent produced upon the banks of the Ganges, and under circumstances but little understood, which is poisonous to many persons.

"This agent manifests itself among persons living or travelling together, but always presents an uninterrupted chain.

"The cholera is a disease transmissible by men.

"This agent manifests its influence upon certain individuals of the human species (probably, also, upon certain kinds of animals) by effects more or less grave.

"The proportion of persons who are affected by this agent can only be approximately estimated, and is always very small. The human organization may become a fertile soil for the multiplication of this agent, as soon as it shows its poisonous effects.

"The multiplication of this agent takes place particularly in the digestive canal.

"The alvine and gastric discharges of patients affected with cholera contain the effective agent in transmission.

"This efficacy does not coincide with the escape of the discharges. It is subsequent to them by several days.

"It appears to be destroyed after a space of from fifteen days to three weeks.

"The corpses of cholera patients emit the poisonous agent in a much higher degree than the sick.

"Persons affected only with cholérine emit with their dejections an agent capable of producing true cholera about them.

"The greater or less density of the sun's rays to which these dejections are exposed diminishes or favors the propagation of the disease.

"The circumstances which, besides the individual receptivity, the conditions of which are entirely unknown, favor the effectual reception of the toxical agent, are the gastro-intestinal affections, depressing affections of the nervous system, errors of diet, excesses, and all things which diminish the organic energy necessary for the elimination of the poisonous agent.

"Its energy is in proportion to its concentration, and this to the importance of the foci.

"The radius of effectual action of this agent is very limited. Its diffusion in the atmosphere diminishes and annuls its effects.

"The practical indications which flow from these conclusions are as follows:—

"The establishment of certain measures with regard to healthy persons and objects coming from infected places.

"The state of science ought to convince us that healthy persons and objects which have not been used by the sick are little adapted to bear the poisonous agent. This, to be efficacious, must be produced in quantity (as this only happens among the sick, and is fixed upon objects which have received their dejections).

"Very rigid measures with regard to sick persons arriving from an infected country, by isolating the sick and by the disinfection or destruction of their dejections, the disinfection of places occupied by them. These measures applied with care in other countries have produced unlooked-for results.

"Well-regulated sanitary inspection. An appeal to all the physicians of the country to announce to the authorities the first cases of the disease, and to apply to the first patients and their dejections the preceding rules.

"The necessity of not leaving in the houses, but of transporting to special places, the dead bodies.

"Isolation of the sick.

"Never to forget that even in a pronounced and extended epidemic the barriers opposed to the radiation of every case of cholera in particular, may prevent numerous misfortunes.

"To remember the facts which have been observed of the recrudescence of epidemics in the spring after being quieted by frost, and to take measures to escape the possible subsequent ravages."

The following extracts are translated from a memoir communicated by M. Grimaud to the Académie des Sciences, entitled "*Etudes sur la Choléra faites à Marseille en Septembre et Octobre, 1865*":—

"*Origin of the Epidemic.*—Sunday, June 11th, at half past two, the *Stella*, Capt. Regnier, entered the port Napoleon. The ship had left



Alexandria the first of June with 97 passengers, of whom 67 were Algerian pilgrims. She brought the first news of the existence of cholera at Alexandria. On the evening of the same day, June 11th, the Bizantine arrived with 55 passengers, having left Alexandria June 3d, and touched at Malta. On the 15th, the Syria, with the English mail and 320 passengers, and on the 16th the Said, with 190 passengers.

"Between the 11th and 16th of June, then, 562 persons arrived at Marseilles from Alexandria, where the epidemic was in the ascendant at the time of their departure. What has become of these 562 persons? They are scattered, but if one could call them by name, the tomb would reply for more than one of them.

"But I have been able to follow, step by step, from the time of their arrival at Fort St. Jean to their departure the destiny of the 67 pilgrims. The ship left Alexandria the first of June, bearing 67 pilgrims from Mecca. Eight days after its departure, June 9th, there were thrown into the sea two of this number, and two days after this, on the 11th, the 65 remaining disembarked, of whom Ben Kaddour succumbed on landing.

"These pilgrims came from Mecca via Djeddah and Suez. From May 20th to June 22d, nearly 20,000, *all more or less infected*, passed Suez, according to the report of the chief physician at the Ismuth, in order to embark at Alexandria for Europe or elsewhere. Between May 20th and June 22d, several thousand of them encamped at Alexandria, near the canal of Madmoudieh. \* \* \* \*

"The populations of Suez, Alexandria, Marseilles, &c., were healthy, when some pilgrims from Mecca, embarked at Djeddah, came in contact with them, and the cholera, which was at Djeddah, declared itself among them. It was at Djeddah when the Marseilles pilgrims left there. Some of them died during the passage; we know three of them—the two who succumbed a couple of days before arriving at Marseilles, and the third who died on touching shore. The cholera travelled with them; they bore it.

"The Arabs left Fort Saint Jean to re-embark. A crowd of the curious of that populous quarter mixed itself with the pilgrims, surrounded them and assisted them in loading their baggage outside the Fort. It accompanied them along the bridge overlooking that old part of the city. Here it was that the first cases of cholera showed themselves. They were rare at first, and their character was misunderstood or concealed. The physicians said, 'let us say nothing about it; it is not necessary to frighten the poor people.' But the cholera did not remain confined to the quarter where it first appeared; on the 22d of June a frightful case was reported by Dr. Forcade in rue de Rome. Thus it is that the cholera has for the sixth time been introduced and developed in Marseilles.

"*Facts of Contagion.*—I have said that the disease leaves its principle in baggage. I mention no doubtful facts. Here is one of many others:—

"Near Saint-Jean-du-Desert, at Saint-Pierre, not far from Marseilles, in an isolated place, a peasant died of cholera; his wife also died. He had not left the country, 'but,' says Dr. Dussiler, 'his wife was a laundress, and had received a bundle of linen belonging to an indi-

vidual recently arrived from Egypt. It was the husband who opened the bundle and unfolded all the pieces.'

"Still another: The postal department of Marseilles numbers 120 persons, of whom 75 to 80 are clerks; 22 are employed at the bureau of departure and 9 at the bureau of arrival. There has not been a single death, or even a case of sickness at the former bureau, while of the latter nine employées eight have been sick and one has died. These eight have been taken sick one after the other; this has been proved of the first five. The one who opened the despatches from the East fell sick, was '*cholériste*,' was the expression used. Another was put in his place—the same effect, and so on up to the fifth.

"Now all is explained; there is no longer any mystery in the march of the pestilence. The cholera travels with men and with things. Where man and his effects do not travel, there the malady does not show itself. The 562 travellers of the *Stella*, Byzantine, Syria and Saïd, with their correspondence and effects, disembarked at Marseilles from the 11th to the 16th of June, are scattered in Europe, and wherever they have settled they have sown the seed of cholera. This seed has germinated wherever it has found a soil prepared for its reception, that is to say, constitutions predisposed by feebleness derived from previous illness, from intemperance, or from the non-ob servance of the laws of public and private hygiene."

#### VITAL STATISTICS OF BOSTON.

FOR THE WEEK ENDING SATURDAY, DECEMBER 16th, 1865.

##### DEATHS.

	Males.	Females.	Total.
Deaths during the week	28	42	70
Ave. mortality of corresponding weeks for ten years, 1853—1863	37.8	39.4	77.2
Average corrected to increased population	00	00	84.16
Death of persons above 90	-	0	0

ERRATUM.—The word "Ovariotomy" should be omitted on page 400 of the last number of the JOURNAL.

COMMUNICATIONS RECEIVED.—Proceedings of the Providence Medical Association.

BOOKS AND PAMPHLETS RECEIVED.—Rhinoscopy and Laryngoscopy; their Value in Practical Medicine. By Dr. Friederich Semeleder, Physician in ordinary to the Emperor of Mexico, Member of the Faculty of Vienna, &c. &c. Translated from the German by Edward T. Caswell, M.D. New York: William Wood & Co. 1866.—Transactions of the Twentieth Annual Meeting of the Ohio State Medical Society, in June, 1865.—On Epidemic Cholera, the Phenomena, Causes and Treatment, with an Appendix relating to the Brooklyn (N. Y.) City Sewerage. By Nelson L. North, M.D.—Introductory Lecture at the opening of the New York College of Veterinary Surgeons, Nov., 1865, by Prof. A. S. Copeman.

DIED.—In Lowell, Dec. 13th, Dr. Elisha Huntington, formerly lieutenant governor of this State, and for several years mayor of the city of Lowell, aged 69 years.

DEATHS IN BOSTON for the week ending Saturday noon, December 16th, 70. Males, 28—Females 42. Accident, 4—aneurism of the aorta, 1—apoplexy, 1—inflammation of the brain, 1—bronchitis, 3—cholera infantum, 1—consumption, 9—convulsions, 2—croup, 1—diphtheria, 1—dropsy, 5—dropsy of the brain, 2—typhenter, 1—bilious fever, 1—typhoid fever, 2—disease of the heart, 2—hernia, 1—infantile disease, 4—disease of the kidneys, 3—disease of the liver, 1—inflammation of the lungs, 6—lupus, 1—marasmus, 1—old age, 2—pleurisy, 1—premature birth, 1—puerperal disease, 1—rheumatism, 1—smallpox, 1—teething, 1—unknown, 7.

Under 5 years of age, 20—between 5 and 20 years, 8—between 20 and 40 years, 17—between 40 and 60 years, 10—above 60 years, 15. Born in the United States, 50—Ireland, 13—other places, 7.